



Virginia Pollution Prevention Case Study Virginia Tech

Organization Information

Virginia Polytechnic Institute and State University (Virginia Tech) is a public land-grant university in Blacksburg, Virginia. The University's three primary missions are teaching and learning, research and discovery, and outreach and engagement. Dedicated to its motto *Ut Prosim*, "That I May Serve", Virginia Tech takes a hands-on engaging approach to education, preparing scholars to be leaders in their fields and communities. Virginia Tech offers 215 undergraduate and graduate degree programs to 31,000 full-time students, and manages a research portfolio of more than \$454 million. The main campus includes more than 150 buildings, including 18 LEED registered projects totaling over 1.3 million gross square feet.

Environmental Challenges and Opportunities

Sustainability programs have become an excellent way for colleges and universities to reach out to students in a new way. In the Princeton Review's 2014 College Hopes and Worries Survey, 61% of students reported that a school's commitment to environmental sustainability was somewhat, very, or extremely important to their decision to attend a particular school.

Sustainability programs are growing in importance to both current and prospective students and that is why Virginia Tech's programs include student engagement in a variety of ways. In addition to the desire to stay competitive to incoming students, there are direct economic benefits as a result of the student engagement programs as well. It costs the university almost twice as much to collect a ton of trash, \$53/ton, than it does to collect a ton of bottles and cans, \$32/ton. Getting students to buy-in to the programs is what makes them effective.

Students were the main force behind sustainability programs at Virginia Tech being pushed for in 2007-2008. At that time numerous universities in the U.S. were signing the ACUPCC (American College and University President's Climate Commitment), which stated that schools would put together plans to become carbon neutral. There was pressure from students for Virginia Tech's president to follow suit and to get sustainability on the radar of the school's leadership. President Steger announced in 2008 that the University would not sign the ACUPCC, and instead tasked the Energy and Sustainability Committee to develop a Virginia Tech Climate Action Commitment and Sustainability Plan (VTCAC&SP) that is unique to the Virginia Tech and achievable.

It is a balancing act to decide which initiatives to pursue. When the students are demanding to see action on a particular issue, the school works to find a solution to that issue if possible. Sometimes the University is unable to implement a program because of cost, politics, or staffing issues. The University strives to do all that they can with the time, money, and people available. Their motto is that they "would rather do five things really well than 15 things half well".

Implementation of the Program

In May 2013, Virginia Tech President Charles Steger approved the revised version of the Virginia Tech Climate Action Commitment (VTCAC); the original was approved in 2009. The VTCAC is a series of 14 resolutions that lay out the sustainability goals of the institution,

including the creation of a sustainability office. The first point in the VTCAC says that, “Virginia Tech will be a leader in campus sustainability. Sustainability is an integral part of the fabric of the university as it pursues enhanced economic stability and affordability, diversity and inclusion, environmental stewardship, expansion of knowledge, and education of future leaders.” Additionally, point number 10 says that, “Virginia Tech will engage students, faculty, and staff through education and involvement to develop and implement innovative strategies for efficient and sustainable use of energy, water, and materials in all university-owned facilities.” The goal is for all students who come to Virginia Tech to be surrounded by buildings, operations, programs, and an education steeped in a culture of sustainability and environmental stewardship.

Virginia Tech has started several successful student engagement programs that bring the campus ever closer to achieving that vision. Programs include the Sustainability Internship Program, Sustainability Week, the Green RFP Program, Green Graduation Pledge, the Ytoss Collection and Sale, and many more. The primary goal of these programs is to change behaviors, with the ultimate goal that sustainable behaviors will no longer be something that people have to think about doing because it will become a part of everyday life. By joining the Graduation Pledge Alliance in 2014, Virginia Tech took steps to make that commitment to sustainability last beyond the students’ time at the university. The green graduation pledge states “I pledge to explore and take into account the social and environmental consequences of any job I consider and will try to improve these aspects of any organizations for which I work.” Any graduating student can sign the pledge and receive a green cord, at no cost, to be worn on graduation. In May 2015, over 650 graduating students signed the pledge.

Sustainability Innovations

The VT Bicycle Ambassador Program encourages the responsible use of bicycles for transportation. Ambassadors are student volunteers and bicycle enthusiasts who educate faculty, staff, and students on bicycle safety techniques, assist with basic bicycle repair, provide the university community with information on campus bicycle events, and encourage the use of proper bicycling behavior. This program engages students and encourages the use of alternative transportation to reduce their carbon footprint. The League of American Bicyclists has designated Virginia Tech as a Bronze Bicycle Friendly University, recognizing their commitment to promoting and providing a more bicycle-friendly campus. After Virginia Tech was designated as a Bike Friendly Campus, the Town of Blacksburg worked to be designated as a Bike Friendly Town.

The Green RFP Program was initiated in 2010 and solicits sustainability proposals from recognized student organizations that help to advance sustainability on campus. The Green RFP Program has approved 32 student proposals totaling almost \$400,000. The program gives preference to proposals that support the VTCAC, that produce realizable savings, and that require one-time rather than ongoing funding. The university is especially interested in seeking proposals that support energy efficiency and energy conservation. One of these Green RFP projects was the installation of over 30 water bottle refill stations all over campus. These water bottle refill stations reduce the usage of single-use bottles, which reduces the carbon dioxide emissions from their production and distribution. The university estimates that these stations prevent over 15,000 pounds of plastic waste each year. As a result of a second Green RFP

submission, another 30 water bottle refill stations are being added to campus in 2015, including one for every residence hall and special housing unit.

In addition to the water bottle refill stations, the Green RFP Program has also funded projects for electric hand dryers, low-flow showerhead fixtures, triple waste sorting stations in dining halls, and bike fix-it stations. Many of these efforts not only deliver a cost savings for the university once implemented, but they have also reduced water and energy usage.

Energy Reduction

The VTCAC commits Virginia Tech to improve electricity and heating efficiency of campus facilities and other operations by improving the heating and cooling infrastructure and operation, lighting efficiency, equipment efficiency, and metering and controls of its existing buildings.

As part of this commitment, Virginia Tech hosted an energy savings competition called “Turn Down for Watt”. The competition was held over a four-week period and each week had its own theme. The winning residence hall reduced its energy an average of 20% over the 4-week period, and the winning Greek Life house reduced its energy by almost one-third. This competition was a huge effort planned and coordinated by student interns in the Office of Energy and Sustainability, with assistance from Students for Clean Energy and the Residence Hall Federation Student Executive Board. Together, these students worked to educate their peers about energy conservation through face-to-face and social media outreach.

In addition to these types of energy awareness campaigns, Virginia Tech has also been working on a campaign called “Beyond Coal.” This effort is part of a larger national movement to get coal powered steam plants to convert to a more environmentally friendly fuel source, or to be moved off campus. Virginia Tech is well on its way to replacing coal with natural gas as the primary fuel source in the on-campus steam plant. This effort is expected to reduce the emissions from the plant by half.

Waste Reduction & Recycling

Virginia Tech is well on its way to meeting its VTCAC commitment to “minimize waste and achieve a 50% recycle rate by 2020.” The recycling rate for calendar year 2014 was 40.5%. The University has found many innovative ways to reduce waste through their Hokie Hi Zero Waste Picnic, annual recycling events, Dining Services’ Reusable To-Go Programs, and the Ytoss Collection and Sale. The picnic, which is the annual welcome picnic for incoming freshmen and transfer students, is held at Lane Stadium and was a zero waste event for the first time in 2014. Student volunteers helped guide event attendees on how to sort their waste into compost and recycling receptacles. During the event 3,180 pounds of waste were composted.

Virginia Tech makes it a point to celebrate and promote America Recycles Day and RecycleMania each year. America Recycles Day occurs every November and RecycleMania occurs over a two-month period in the spring. Student interns with the Office of Energy and Sustainability are responsible for coordinating and planning these events with the focus on peer-to-peer education. During the 2014 RecycleMania competition, Virginia Tech led the way to win the national Recycling Pledge Competition by collecting over 500 pledges from students to recycle and encourage their friends to recycle as well. The “Caught Green Handed” social media

campaign that went along with that effort won the National Wildlife Foundation Campus Ecology Case Study Competition for its innovation and use of social media technology.

In an effort to reduce waste year-round, the Dining Services' Reusable To-Go Program utilizes reusable water bottles and to-go containers. Dining Services not only encourages the use of these reusable items instead of disposable ones, they also provide incentives for students. Once purchased, the reusable water bottles give students a discount on soft drinks purchased in the dining facilities on campus, as well as free water. Since August 2014, over 700 water bottles have been sold, preventing thousands of single-use cups from being thrown into the landfill. Reusable to-go containers are presented as an option when students order food at the register. The student pays a \$3 deposit and when they are done with the container they bring it back to the OZZI machine and receive a token that can be used for their next reusable to-go container. Since the start of the Reusable To-Go Program in 2013, about 1.3% of all meals sold at the dining halls were in the reusable containers instead of foam. As a result of a resolution passed by Virginia Tech Student Government Association, every incoming freshmen starting in the fall of 2015 will receive a free reusable to-go container. Also, two additional OZZI machines are being installed on campus as a result of the Green RFP program. These initiatives are expected to significantly increase the number of meals eaten in these containers, with a goal to serve 10% of all meals in reusable to-go containers by 2020. Students are encouraged to share pictures of where they take their reusable to-go containers on social media with the hashtag #VTReusable.

Ytoss is the YMCA at Virginia Tech's largest sustainability initiative. Each year volunteers collect gently-used items during student move-out and make them available for sale during the next student move-in. The Ytoss program has engaged over 1,200 community volunteers and generated over \$60,000. Profits support the YMCA Student Programs that nurture the potential of youth and teens, improve the health and well being of individuals and families, and inspire social responsibility throughout the New River Valley. Since its inception in 2006 Ytoss has diverted more than 100 tons of gently-used household items from the waste stream.

Evaluation of the Process

In 2014, Virginia Tech successfully submitted for a STARS (Sustainability Tracking, Assessment, and Rating System) Gold Rating, ranking it in the top 8% of schools nationally and second highest in the Commonwealth of Virginia. The program is run by the Association for the Advancement of Sustainability in Higher Education (AASHE) and is the best way for universities to assess how effective their sustainability programs are compared to hundreds of other schools. STARS addresses 135 sustainability credits grouped into three categories: Education and Research; Operations; and Planning, Administration, and Engagement. Many of the STARS credits directly relate to student engagement.

Student engagement and participation has always been a critical part of sustainability programming at Virginia Tech. Sustainability is participatory, so the environmental efforts cannot succeed if the campus community does not take part. The recycling rate has increased from 18% in 2004 to 40% in 2014, in large part because of student efforts. Housing and Residence Life has been a critical partner in developing and deploying several of the student engagement programs on campus. Offices submit materials to be given out to every student who lives in the residence halls and the packet of information awaits them on their bed as they move

into their room. The Office of Energy and Sustainability includes in this packet a guide on how to recycle and reduce energy in the residence halls.

The success of the programs can change from year to year because student engagement depends on the culture of where you are, the particular people that happen to participate, and even the weather. Every time Virginia Tech tries something new, they put a very critical eye to it to see if it was successful and worth trying again. By analyzing each project they are able to determine if something needs to be tweaked, like the date or time of the event, in order to get the intended result. When it comes to sustainability programming in higher education there is no “one size fits all” approach. Although a problem may be the same on 10 different campuses, it will require 10 unique approaches to solve it because it needs to be tailored to that student community. It has been a long process of learning what does and doesn’t work in a particular place, time, and culture. While Virginia Tech tries learning from other schools’ outreach campaigns that have worked, they also want to pursue ideas that are unique and make an impact on their campus.

In addition to student involvement, Virginia Tech also has permanent programs and employees that meet regularly to coordinate sustainability efforts such as the Office of Energy and Sustainability. The Alternative Transportation Office’s mission is to promote and encourage the use of alternative modes of transportation to get to, from, and around campus. Additionally, Dining Services has a Sustainability Coordinator who is responsible for overseeing sustainability programs that reduce the impact of all dining operations on campus. Even though students come and go from the university, these offices are there to ensure consistency in programming and sustainability efforts from one year to the next.

Continual Improvement of the Program

Virginia Tech has worked to make their sustainability program a model for other universities. STARS reports are completely public, allowing anyone to see a detailed description of over 100 aspects of the school’s sustainability program. Every credit is assigned a “responsible party” with contact information, making follow up for interested parties easier.

Student engagement programs have also been featured as models for innovation at the state level. The Student Internship Program and the Green RFP Program were both presented at the Leading Change Through Innovation and Collaboration Conference held at the University of Virginia on December 3, 2014. The conference was a forum for Virginia public higher education faculty, staff, administrators, and leaders to share ideas and best practices.

Virginia Tech has a lot of plans to grow student involvement in sustainability programs in the coming years. Last spring Virginia Tech partnered with the YMCA to put on a “Really, Really Free Market Stuff Exchange” where students could bring unwanted items to the exchange, and then trade them for something they did want. It was very successful, and they are hoping to host this event every semester. There has also been success with having students stationed in front of waste stations in the dining halls to help students sort their waste correctly. The school got positive feedback from both students and the dining facility staff on this program and would like to make this a regular occurrence in the dining halls early in the year, so that students can be trained to correctly sort waste. Virginia Tech is hoping to partner with some of the service groups on campus to provide a regular stream of volunteers for this program.

The campus is currently transitioning to single stream recycling, which will provide an excellent opportunity to do outreach and education campaigns with students. When the students return in the fall it will be an excellent chance to revamp the recycling education to engage everyone on campus: new students, returning students, faculty, staff, and administrators alike. In addition to new recycling practices on campus, Virginia Tech is also working to make tailgate recycling on campus a more robust and engaging program. A pilot program was conducted in 5 alumni parking lots to see if they could improve recycling. There were several designated “recycling zones” in each of the lots where they placed a large sign and an A-frame with recycling bags and instructions in the “zones”. People were asked to take bags, fill them with recyclables, and then return the bags to the same place to be collected when the game starts. The program was moderately successful, and they are working to expand it into 2 additional lots next year.

Next fall Virginia Tech is hoping to launch a green dorm certification program. This would give students living in the residence halls the tools they would need to make their residence hall rooms more sustainable in the areas they have control over, rather than relying only on things like turning down the thermostat or changing light bulbs. The student intern team will design the program, determine the best way to administer the program, and build support for it among the students and within Residence Life.

Virginia Tech believes that there is always a way to improve programs and learn from them. After “Turn Down for Watt”, they realized that they did not collect enough baseline data to compare competition data to and they did not do enough marketing about the competition before it actually started. They also determined that they relied too heavily on social media to deliver information and instructions. While social media will continue to play a major part in the program, Virginia Tech plans to implement more hands-on outreach programs during the competition as well. The competition was successful due to a partnership with the Students for Clean Energy and Virginia Tech would like to build on that success and include more student groups in the future, including the Residence Hall Federation.

This year during RecycleMania, Virginia Tech had a full week devoted to social media campaigns. Every day they ran a different campaign that involved posting photos on their Facebook page, hashtagging posts on Twitter, and other outreach. Each individual event was successful, but they found that there were too many, too close to one another. Next year they will tweak the amount and timing of social media campaigns to find the right fit. One idea is to run a selfie campaign for a whole week instead of a day. Virginia Tech plans to continue using social media platforms like Instagram, Twitter, Facebook, and Snapchat, since this is the best way for them to reach their main demographic. When it comes to student engagement in sustainability programs, multiple forms of communication and outreach need to be used in order to see the greatest impact.